

#5

SEQUENCE LISTING

<110> Chen, Jin-Long
 Amaral, M. Catherine
 Tularik Inc.

<120> Human Uncoupling Protein 2 (hUCP2): Compositions and
 Methods of Use

<130> 018781-001110US

<140> US 09/884,814

<141> 2001-06-18

<150> US 09/124,293

<151> 1998-07-29

<160> 8

<170> PatentIn Ver. 2.1

<210> 1

<211> 309

<212> PRT

<213> Homo sapiens

-2205

<223> human uncoupling protein 2 (hUCP2) Chen (Tularik)

<400> 1

Met Val Gly Phe Lys Ala Thr Asp Val Pro Pro Thr Ala Thr Val Lys

1 10 15

Phe Leu Gly Ala Gly Thr Ala Ala Cys Ile Ala Asp Leu Ile Thr Phe 20 25 30

Pro Leu Asp Thr Ala Lys Val Arg Leu Gln Ile Gln Gly Glu Ser Gln

Gly Pro Val Arg Ala Thr Ala Ser Ala Gln Tyr Arg Gly Val Met Gly
50 60

Thr Ile Leu Thr Met Val Arg Thr Glu Gly Pro Arg Ser Leu Tyr Asn
65 70 75 80

Gly Leu Val Ala Gly Leu Gln Arg Gln Met Ser Phe Ala Ser Val Arg

Ile Gly Leu Tyr Asp Ser Val Lys Gln Phe Tyr Thr Lys Gly Ser Glu
100 105 110

His Ala Ser Ile Gly Ser Arg Leu Leu Ala Gly Ser Thr Thr Gly Ala 115 120 125

Leu Ala Val Ala Val Ala Gln Pro Thr Asp Val Val Lys Val Arg Phe
130 135 140

Gln Ala Gln Ala Arg Ala Gly Gly Gly Arg Arg Tyr Gln Ser Thr Val 145 150 155 160

Asn Ala Tyr Lys Thr Ile Ala Arg Glu Glu Gly Phe Arg Gly Leu Trp

Lys Gly Thr Ser Pro Asn Val Ala Arg Asn Ala Ile Val Asn Cys Ala
180 185 190

Glu Leu Val Thr Tyr Asp Leu Ile Lys Asp Ala Leu Leu Lys Ala Asn 195 200 205

Leu Met Thr Asp Asp Leu Pro Cys His Phe Thr Ser Ala Phe Gly Ala 210 215 220

Gly Phe Cys Thr Thr Val Ile Ala Ser Pro Val Asp Val Val Lys Thr 225 230 235 240

```
Arg Tyr Met Asn Ser Ala Leu Gly Gln Tyr Ser Ser Ala Gly His Cys
                245
                                    .250
Ala Leu Thr Met Leu Gln Lys Glu Gly Pro Arg Ala Phe Tyr Lys Gly
                                                     270
            260
                                265
Phe Met Pro Ser Phe Leu Arg Leu Gly Ser Trp Asn Val Val Met Phe
        275
                            280
                                                285
Val Thr Tyr Glu Gln Leu Lys Arg Ala Leu Met Ala Ala Cys Thr Ser
    290
                        295
Arg Glu Ala Pro Phe
305
<210> 2
<211> 930
<212> DNA
<213> Homo sapiens
<220>
<221> CDS
<222> (1)..(930)
<223> human uncoupling protein 2 (hUCP2) Chen (Tularik)
atggttgggt tcaaggccac agatgtgccc cctactgcca ctgtgaagtt tcttggggct 60
ggcacagctg cctgcatcgc agatctcatc acctttcctc tggatactgc taaagtccgg 120
ttacagatcc aaggagaaag tcaggggcca gtgcgcgcta cagccagcgc ccagtaccgc 180
ggtgtgatgg gcaccattct gaccatggtg cgtactgagg gcccccgaag cctctacaat 240
gggctggttg ccggcctgca gcgccaaatg agctttgcct ctgtccgcat cggcctgtat 300
gattetgtea aacagtteta caccaaggge tetgageatg ceageattgg gageegeete 360
ctagcaggca gcaccacagg tgccctggct gtggctgtgg cccagcccac ggatgtggta 420
aaggtccgat tccaagctca ggcccgggct ggaggtggtc ggagatacca aagcaccgtc 480
aatgeetaca agaceattge eegagaggaa gggtteeggg geetetggaa agggaeetet 540
cccaatgttg ctcgtaatgc cattgtcaac tgtgctgagc tggtgaccta tgacctcatc 600
aaggatgccc tcctgaaagc caacctcatg acagatgacc tcccttgcca cttcacttct 660
qcctttqqqq caqqcttctq caccactqtc atcgcctccc ctgtagacqt ggtcaagacq 720
agatacatga actotgocot gggocagtac agtagogotg gocactgtgo cottacoatg 780
ctccagaagg aggggccccg agccttctac aaagggttca tgccctcctt tctccgcttg 840
ggttcctgga acgtggtgat gttcgtcacc tatgagcagc tgaaacgagc cctcatggct 900
                                                                   930
gcctgcactt cccgagaggc tcccttctga
<210> 3
<211> 34
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence:U1F primer
<400> 3
                                                                   34
atcaagctta tggttgggtt caaggccaca gatg
<210> 4
<211> 33
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence:U8R primer
```

<400> 4 33 atcqgatcct cagaagggag cctctcggga agc <210> 5 <211> 930 <212> DNA <213> Homo sapiens <220> <221> CDS <222> (1)..(930) <223> human ucoupling protein 2 (hUCP2) Tartaglia et al. <400> 5 atg gtt ggg ttc aag gcc aca gat gtg ccc cct act gcc act gtg aag Met Val Gly Phe Lys Ala Thr Asp Val Pro Pro Thr Ala Thr Val Lys 96 ttt ctt ggg gct ggc aca gct gcc tgc atc gca gat ctc atc acc ttt Phe Leu Gly Ala Gly Thr Ala Ala Cys Ile Ala Asp Leu Ile Thr Phe 20 cct ctg gat act gct aaa gtc cgg tta cag atc caa gga gaa agt cag 144 Pro Leu Asp Thr Ala Lys Val Arg Leu Gln Ile Gln Gly Glu Ser Gln 35 40 ggg cca gtg cgc gct aca gtc agc gcc cag tac cgc ggt gtg atg ggc Gly Pro Val Arg Ala Thr Val Ser Ala Gln Tyr Arg Gly Val Met Gly 50 acc att ctg acc atg gtg cgt act gag ggc ccc cga agc ctc tac aat Thr Ile Leu Thr Met Val Arg Thr Glu Gly Pro Arg Ser Leu Tyr Asn 65 70 ggg ctg gtt gcc ggc ctg cag cgc caa atg agc ttt gcc tct gtc cgc Gly Leu Val Ala Gly Leu Gln Arg Gln Met Ser Phe Ala Ser Val Arg 85 atc ggc ctg tat gat tct gtc aaa cag ttc tac acc aag ggc tct gag 336 Ile Gly Leu Tyr Asp Ser Val Lys Gln Phe Tyr Thr Lys Gly Ser Glu 110 100 cat gcc agc att ggg agc cgc ctc cta gca ggc agc acc aca ggt gcc His Ala Ser Ile Gly Ser Arg Leu Leu Ala Gly Ser Thr Thr Gly Ala 115 120 432 ctg gct gtg gct gtg gcc cag ccc acg gat gtg gta aag gtc cga ttc Leu Ala Val Ala Val Ala Gln Pro Thr Asp Val Val Lys Val Arg Phe 130 135 caa gct cag gcc cgg gct gga ggt cgg aga tac caa agc acc gtc Gln Ala Gln Ala Arg Ala Gly Gly Gly Arg Arg Tyr Gln Ser Thr Val 160 aat gcc tac aag acc att gcc cga gag gaa ggg ttc cgg ggc ctc tgg Asn Ala Tyr Lys Thr Ile Ala Arg Glu Glu Gly Phe Arg Gly Leu Trp

| aaa ggg acc tc Lys Gly Thr Se 18 | r Pro Asn | | | | | | | | | |
|--|-----------|---------------------|-------------|--------------|---------------|----------------|-----------|--|--|--|
| gag ctg gtg ac Glu Leu Val Th 195 | _ | | | | | | | | | |
| ctc atg aca ga Leu Met Thr As 210 | | | | | | | | | | |
| ggc ttc tgc ac Gly Phe Cys Th 225 | | | | | | | | | | |
| aga tac atg aa Arg Tyr Met As | | | Gln Ty | | | | Cys | | | |
| gcc ctt acc at Ala Leu Thr Me 26 | t Leu Gln | | | | | | | | | |
| ttc atg ccc tc Phe Met Pro Se 275 | | | | | | | | | | |
| gtc acc tat ga Val Thr Tyr Gl 290 | | | | | | | | | | |
| cga gag gct cc Arg Glu Ala Pr 305 | _ | | | | | | 930 | | | |
| <210> 6 <211> 309 <212> PRT <213> Homo sapiens | | | | | | | | | | |
| <220> <223> human ucoupling protein 2 (hUCP2) Tartaglia et al. | | | | | | | | | | |
| <400> 6 Met Val Gly Ph | e Lys Ala | Thr Asp | Val P | ro Pro | Thr, Ala | Thr Val | . Lys | | | |
| l Phe Leu Gly Al | | Ala Ala | Cys I | 10 le Ala | Asp Leu | | | | | |
| Pro Leu Asp Th | | | 25 Leu G | ln Ile | _ | 30 Glu Sei | Gln | | | |
| 35 Gly Pro Val Ar 50 | g Ala Thr | 40 Val Ser 55 | Ala G | ln Tyr | 45 Arg Gly | Val Met | Gly | | | |
| Thr Ile Leu Th | r Met Val | | Glu G | ly Pro | | Leu Ty | Asn 80 | | | |
| Gly Leu Val Al | | Gln Arg | | | Phe Ala | Ser Val | Arg | | | |
| Ile Gly Leu Ty 10 | r Asp Ser | Val Lys | | | Thr Lys | Gly Ser 110 | Glu | | | |

His Ala Ser Ile Gly Ser Arg Leu Leu Ala Gly Ser Thr Thr Gly Ala 120 Leu Ala Val Ala Val Ala Gln Pro Thr Asp Val Val Lys Val Arg Phe 135 140 Gln Ala Gln Ala Arg Ala Gly Gly Gly Arg Arg Tyr Gln Ser Thr Val 150 Asn Ala Tyr Lys Thr Ile Ala Arg Glu Glu Gly Phe Arg Gly Leu Trp 165 170 Lys Gly Thr Ser Pro Asn Val Ala Arg Asn Ala Ile Val Asn Cys Ala 185 180 Glu Leu Val Thr Tyr Asp Leu Ile Lys Asp Ala Leu Leu Lys Ala Asn 200 Leu Met Thr Asp Asp Leu Pro Cys His Phe Thr Ser Ala Phe Gly Ala 220 215 Gly Phe Cys Thr Thr Val Ile Ala Ser Pro Val Asp Val Val Lys Thr 235 230 Arg Tyr Met Asn Ser Ala Leu Gly Gln Tyr Ser Ser Ala Gly His Cys 245 250 Ala Leu Thr Met Leu Gln Lys Glu Gly Pro Arg Ala Phe Tyr Lys Gly 265 Phe Met Pro Ser Phe Leu Arg Leu Gly Ser Trp Asn Val Val Met Phe 280 285 Val Thr Tyr Glu Gln Leu Lys Arg Ala Leu Met Ala Ala Cys Thr Ser 300 Arg Glu Ala Pro Phe <210> 7 <211> 930 <212> DNA <213> Homo sapiens <220> <221> CDS <222> (1)..(930) <223> human uncoupling protein 2 (hUCP2) Fleury et al. atg gtt ggg ttc aag gcc aca gat gtg ccc cct act gcc act gtg aag Met Val Gly Phe Lys Ala Thr Asp Val Pro Pro Thr Ala Thr Val Lys 15 ttt ctt ggg gct ggc aca gct gcc tgc atc gca gat ctc atc acc ttt Phe Leu Gly Ala Gly Thr Ala Ala Cys Ile Ala Asp Leu Ile Thr Phe 20 cct ctg gat act gct aaa gtc cgg tta cag atc caa gga gaa agt cag Pro Leu Asp Thr Ala Lys Val Arg Leu Gln Ile Gln Gly Glu Ser Gln 35 40 qqq cca qtq cqc qct aca qcc aqc gcc cag tac cgc ggt gtg atg ggc Gly Pro Val Arg Ala Thr Ala Ser Ala Gln Tyr Arg Gly Val Met Gly 50 acc att ctg acc atg gtg cgt act gag ggc ccc cga agc ctc tac aat

Thr Ile Leu Thr Met Val Arg Thr Glu Gly Pro Arg Ser Leu Tyr Asn

| | | | | | | | | | | agc Ser | | | | | | 288 |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-----|
| | | | | | | | | | | tac Tyr | | | | | | 336 |
| cat His | gcc Ala | agc Ser 115 | att Ile | Gly aaa | agc Ser | cgc Arg | ctc Leu 120 | cta Leu | gca Ala | ggc Gly | agc Ser | acc Thr 125 | aca Thr | ggt Gly | gcc Ala | 384 |
| ctg Leu | gct Ala 130 | gtg Val | gct Ala | gtg Val | gcc Ala | cag Gln 135 | ccc Pro | acg Thr | gat Asp | gtg Val | gta Val 140 | aag Lys | gtc Val | cga Arg | ttc Phe | 432 |
| | | | | | | | | | | aga Arg 155 | | | | | | 480 |
| | | | | | | | | | | Gly 999 | | | | | | 528 |
| aaa Lys | Gly 333 | acc Thr | tct Ser 180 | ccc Pro | aat Asn | gtt Val | gct Ala | cgt Arg 185 | aat Asn | gcc Ala | att Ile | gtc Val | aac Asn 190 | tgt Cys | gct Ala | 576 |
| gag Glu | ctg Leu | gtg Val 195 | acc Thr | tat Tyr | gac Asp | ctc Leu | atc Ile 200 | aag Lys | gat Asp | gcc Ala | ctc Leu | ctg Leu 205 | aaa Lys | gcc Ala | aac Asn | 624 |
| ctc Leu | atg Met 210 | aca Thr | gat Asp | gac Asp | ctc Leu | cct Pro 215 | tgc Cys | cac His | ttc Phe | att Ile | tct Ser 220 | gcc Ala | ttt Phe | gly ggg | gca Ala | 672 |
| ggc Gly 225 | ttc Phe | tgc Cys | acc Thr | act Thr | gtc Val 230 | atc Ile | gcc Ala | tcc Ser | cct Pro | gta Val 235 | gac Asp | gtg Val | gtc Val | aag Lys | acg Thr 240 | 720 |
| aga Arg | tac Tyr | atg Met | aac Asn | tct Ser 245 | gcc Ala | ctg Leu | ggc Gly | cag Gln | tac Tyr 250 | agt Ser | agc Ser | gct Ala | ggc Gly | cac His 255 | tgt Cys | 768 |
| | | | | | | | | | | cga Arg | | | | | | 816 |
| ttc Phe | atg Met | ccc Pro 275 | tcc Ser | ttt Phe | ctc Leu | cgc Arg | ttg Leu 280 | ggt Gly | tcc Ser | tgg Trp | aac Asn | gtg Val 285 | gtg Val | atg Met | ttc Phe | 864 |
| gtc Val | acc Thr 290 | tat Tyr | gag Glu | cag Gln | ctg Leu | aaa Lys 295 | cga Arg | gcc Ala | ctc Leu | atg Met | gct Ala 300 | gcc Ala | tgc Cys | act Thr | tcc Ser | 912 |
| _ | | _ | ccc Pro | ttc Phe | tga 310 | | | | | | • | | | | | 930 |

<210> 8 <211> 309 <212> PRT <213> Homo sapiens

<220>

<223> human uncoupling protein 2 (hUCP2) Fleury et al.

<400> 8 Met Val Gly Phe Lys Ala Thr Asp Val Pro Pro Thr Ala Thr Val Lys 10 Phe Leu Gly Ala Gly Thr Ala Ala Cys Ile Ala Asp Leu Ile Thr Phe 25 20 Pro Leu Asp Thr Ala Lys Val Arg Leu Gln Ile Gln Gly Glu Ser Gln 35 40 Gly Pro Val Arg Ala Thr Ala Ser Ala Gln Tyr Arg Gly Val Met Gly 55 60 Thr Ile Leu Thr Met Val Arg Thr Glu Gly Pro Arg Ser Leu Tyr Asn 70 75 Gly Leu Val Ala Gly Leu Gln Arg Gln Met Ser Phe Ala Ser Val Arg 85 90 Ile Gly Leu Tyr Asp Ser Val Lys Gln Phe Tyr Thr Lys Gly Ser Glu 105 His Ala Ser Ile Gly Ser Arg Leu Leu Ala Gly Ser Thr Thr Gly Ala 120 Leu Ala Val Ala Val Ala Gln Pro Thr Asp Val Val Lys Val Arg Phe 135 Gln Ala Gln Ala Arg Ala Gly Gly Gly Arg Arg Tyr Gln Ser Thr Val 150 · 155 Asn Ala Tyr Lys Thr Ile Ala Arg Glu Glu Gly Phe Arg Gly Leu Trp 165 170 Lys Gly Thr Ser Pro Asn Val Ala Arg Asn Ala Ile Val Asn Cys Ala 185 Glu Leu Val Thr Tyr Asp Leu Ile Lys Asp Ala Leu Leu Lys Ala Asn 200 205 195 Leu Met Thr Asp Asp Leu Pro Cys His Phe Ile Ser Ala Phe Gly Ala 220 215 Gly Phe Cys Thr Thr Val Ile Ala Ser Pro Val Asp Val Val Lys Thr 230 235 Arg Tyr Met Asn Ser Ala Leu Gly Gln Tyr Ser Ser Ala Gly His Cys 250 245 Ala Leu Thr Met Leu Gln Lys Glu Gly Pro Arg Ala Phe Tyr Lys Gly 270 265 Phe Met Pro Ser Phe Leu Arg Leu Gly Ser Trp Asn Val Val Met Phe 280 285 Val Thr Tyr Glu Gln Leu Lys Arg Ala Leu Met Ala Ala Cys Thr Ser 295 300 Arg Glu Ala Pro Phe

305